**K-5 Math Lesson Plan**

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| **Teacher:** Herbin, Tennyson, Harris, Williams | | | **Grade:** 5th | | | | **Date(s)**: September 2012 | |
| **Unit Title:**  Understanding the Decimal Place Value System | | | | | **Corresponding Unit Task:** Lesson 1  2012 Summer Olympics— Junior Sports Reporter Audition  (Teach prior to Post Assessment of Task 4) | | | |
| **Essential Question(s):**   * How can I read and write decimal numbers to thousandths using base-ten, number name, expanded form? * How do I read, write, and use decimals to the thousandths using standard form, word, form, and expanded form? * How can I compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons? * How can I use place value understanding to round decimals to any place? * \*How can I explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10? | | | | | | | | |
| **Materials/Resources** | | | | | **Essential Vocabulary** | | | |
| **Teacher:**  Computer with Internet capabilities, Carousel Questions | | **Student:**  Paper, pencil | | | | All vocabulary from Unit 1 | | |
| **Learning Experience** | | | | | | | | |
| **8 Mathematical Practices:**  √ 1. Make sense of problems and persevere in solving them.  √ 2. Reason abstractly and quantitatively.  √ 3. Construct viable arguments and critique the reasoning of others.  √ 4. Model with mathematics.  5. Use appropriate tools strategically.  √ 6. Attend to precision.  7. Look for and make use of structure.  √ 8. Look for and express regularity in repeated reasoning. | **Common Core State Standards:**  **5.NBT.2**  Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.  **5.NBT.3a**  Read and write decimal numbers to thousandths using base-ten, number name, expanded form, e.g. 347.392=3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000).  **5.NBT.3b**  Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. (Correlates to NCSCOS Math Objective 1.01)  **5.NBT.4**  Use place value understanding to round decimals to any place. (Correlates to NCSCOS Math Objective 1.01) | | | | | | | |
| **I Can Statement(s):**   * I can read decimals to the thousandths using base ten numerals. * I can read decimals to the thousandths using number names. * I can read decimals to the thousandths using expanded form. * I can write decimals to the thousandths using base ten numerals. * I can write decimals to the thousandths using number names. * I can write decimals to the thousandths using expanded form. * I can use base-ten numerals to form decimal numbers to the thousandths using base-ten numerals. * I can use base-ten numerals to form decimal numbers to the thousandths using number names. * I can use base-ten numerals to form decimal numbers to the thousandths using expanded forms. * I can record results of comparisons of decimals to the thousandths. * I can use the symbol (=) when comparing numbers. * I can use the symbol (<) when comparing numbers. * I can use the symbol (>) when comparing numbers. * I can compare two decimals to the thousandths based on placement of the digits. * I can round a decimal to the tenths place. * I can round a decimal to the hundredths place. * I can round a decimal to the thousandths. * I can explain patterns in the number of zeros of a product when multiplying by powers of ten. * I can explain patterns in the placement of the decimal point when multiplying by powers of ten. * I can explain patterns in the placement of the decimal point when dividing by powers of ten. | | | | | | | |
| **Activating Strategy/Hook:** (How will students become cognitively engaged and focused?)  Watch Video Title: [Skatoony - North American Traile](https://gaggle.net/gaggleVideoProxy.do?op=view&v=06a0060b1318e4ffe546390797aeb966)r found at <http://www1.gcsnc.com/gagglelogin.html> , use your GCS username and password (first three of last name, last four of social) to access. \*\* This will give them an idea of the Hollywood Squares Game.\*\* | | | | | | | |
| **Teacher Directed:**  Teacher will review all skills and concepts taught from the previous lessons. Teacher will use place value anchor charts to review three forms beginning with hundreds and increasing values up to thousandths and incorporate making models of those numbers.  Teacher will review rounding using Ant Hill Rounding chart and review the steps for comparing and ordering numbers. | | | | | | | |
| **Guided Practice:**  Play Hollywood Squares. Have students place 9 desks or chairs in a 3 by 3 grid pattern. Choose 9 students to be the celebrities (who will answer the questions). The rest of the students should be separated into 2 equal groups (one group Xs and one group Os). If you have an uneven number, one student can be the host. Using the Powers of 10 questions, have the first team choose a celebrity and ask them the first question. If they get it correct, they can put their letter (X or O) on that person/desk. Then the next team gets to choose a celebrity and answer a question. Continue until one team has tic tac toe.  **Questions**:   1. Solve the following in the power of ten. 26 X 10 2. Multiply the following by powers of ten (10, 100, and 1,000): 7.32 3. Divide: 590 x 100 4. Divide decimals by powers of ten (10, 100, and 1,000): 49.3 5. Solve the following in the power of ten. 43 X 100 6. Multiply the following by powers of ten (10, 100, and 1,000): .08 7. Divide: 640 x 1,000 8. Divide decimals by powers of ten (10, 100, and 1,000): 789.30 9. Solve the following in the power of ten. 43 x 1,000 | | | | | | | |
| **Independent Practice:**  Carousel Activity. Students should be placed in small groups and rotate to answer questions listed on the sheets posted around the classroom in carousel format. Student groups will write their answers on their own answer sheets while collaborating with their group. Music could be played to signal rotation. (Optional)  **Carousel Questions**   1. Use the number 313,456.111 How many times greater is the value of the 1 in the tenths place than the value of the 1 in the hundredths place? 2. Write: 8 ten thousands + 3 hundreds + 2 tens + 6 thousandths in base ten numeral form. 3. Write 4 x 100,000 + 8 x 1,000 + 7 x 100 + 2 x (1/10) + 4 x (1/1,000) in base ten numeral and number name form. 4. Use >,< = for the following: 0.1 \_\_\_\_ 0.088 11.3 \_\_\_ 11.300 543.879 \_\_\_\_534.172 5. Round 592, 393.506 to places listed. Ones, hundredths, ten thousandths 6. Write the value of the decimal model and use >, <, or = to compare each.   http://image.tutorvista.com/Qimages/QD/392.gif http://janus.shc.edu.bz/in/Alberta_Rotary_TG/Student_Resources/courses/courses/elementary/math6/lessons/ImagesLesson012/L3_003a_.JPG | | | | | | | |
| **Closing/Summarizing Strategy:**  Randomly select a group/student to share their thought processes for finding the solutions to the Carousel problems. Discuss as a class and correct any misunderstandings. | | | | | | | |
| **Differentiation Strategies** | | | | | | | | |
| **Extension** | | | | **Intervention** | | | | **Language Development** |
| **Representations of Decimals**  1. Write the following in expanded form. 168.642  A. 1 × 100 + 6 × 10 + 8 × 0 + 6 × (1/1000) + 4 × (1/100) + 2 × (1/10)  B. 1 × 100 + 6 × 10 + 8 × 0 + 6 × (1/10) + 4 × (1/100) + 2 × (1/1000)  C. 1 × 100 + 6 × 10 + 8 × 1 + 6 × (1/10) + 4 × (1/100) + 2 × (1/1000)  D. 1 × 100 + 6 × 10 + 8 × 1 + 6 × (1/1000) + 4 × (1/100) + 2 × (1/10)  **Comparing Decimals**  2. Select the correct symbol.  0.77 ? 0.481  A. =  B. <  C. >  **Rounding Decimals**  3. Round to the nearest tenth. 9.876  A. 9.8  B. 9.876  C. 9.9  D. 9  **Powers of Ten**  4. In the number 9,999.999, what is the difference between the 9 in the hundredths place and the 9 in the place to its left?  A. The 9 in the hundredths place represents 100 times what the 9 to its left represents.  B. The 9 in the hundredths place represents 10 times what the 9 to its left represents.  C. The 9 in the hundredths place represents of what the 9 to its left represents.  D. The 9 in the hundredths place represents of what the 9 to its left represents.  **Representations of Decimals**  5. How do you read the following decimal number?  7.007  A. seven and seven hundredths  B. seven and seventy hundredths  C. seven and seven thousandths  D. seven and seven tenths  **Comparing Decimals**  6. Select the correct symbol.  0.387 ? 0.78  A. =  B. <  C. >  **Rounding Decimals**  7. Round to the nearest whole number: 39.53  A. 39.5  B. 39  C. 39.6  D. 40  **Powers of Ten**  8. In the number 7,777.777, what is the difference between the 7 in the hundreds place and the 7 in the column to its left?  A. The 7 in the hundreds place represents of what the 7 to its left represents.  B. The 7 in the hundreds place represents 10 times what the 7 to its left represents.  C. The 7 in the hundreds place represents of what the 7 to its left represents.  D. The 7 in the hundreds place represents 100 times what the 7 to its left represents.  **Representations of Decimals**  9. Write the following in standard form.  7 × 100 + 1 × 10 + 6 × 1 + 1 × (1/10) + 9 × (1/100) + 6 × (1/1000)  A. 7161.96  B. 716.196  C. 7161.69  D. 716.691  **Comparing Decimals**  10. Select the correct symbol.  0.5 ? 0.6  A. >  B. =  C. <  **Rounding Decimals**  11. Round to the nearest hundredth: 4.878  A. 4.8  B. 4.88  C. 4  D. 4.878  **Powers of Ten**  12. Calculate the following.  5.91 ÷ 1,000 = \_\_\_\_  A. 5.91  B. 0.0591  C. 0.591  D. 0.00591  **Representations of Decimals**  13. Which of the following is equal to fifty-one and eighty-seven thousandths?  A. 51.87  B. 51.087  C. 51.007  D. 51.807  **Comparing Decimals**  14. Select the correct symbol.  0.004 ? 0.001  A. =  B. <  C. >  **Rounding Decimals**  15. Round to the nearest hundredth. 5.644  A. 5.644  B. 5  C. 5.64  D. 5.6  **Answers**  1. C1 × 100 + 6 × 10 + 8 × 1 + 6 × (1/10) + 4 × (1/100) + 2 × (1/1000)  2. C>  3. C9.9  4. D The 9 in the hundredths place represents of what the 9 to its left represents.  5. C seven and seven thousandths  6. B<  7. D40  8. A The 7 in the hundreds place represents of what the 7 to its left represents.  9. B716.196  10. C<  11. B4.88  12. D0.00591  13. B51.087  14. C>  15. C5.64 | | | | Using the Exit Card listed below… guide the students through each problem using manipulatives as needed.  **Exit Card**  1. How do the places in place value relate to the power of ten?  2. Fill in the blank.  \_\_\_\_ x 10 = 10,000  \_\_\_\_ x 10 = 100,000  \_\_\_\_ x 10 = 100  \_\_\_\_ x 10 = 10,000,000  \_\_\_\_ x 10 = 1,000  3. Write in standard form.  10 to the power of 3 \_\_\_\_\_\_\_\_\_\_\_  10 to the power of 5 \_\_\_\_\_\_\_\_\_\_\_  10 to the power of 7 \_\_\_\_\_\_\_\_\_\_\_ | | | | Teach the powers of ten starting with the example 10 to the 1st power.  Explain that because the exponent is 1, there is only one 10 being multiplied; therefore, the answer is 10.  Next, give the example 10 to the 2nd power.  Demonstrate that this is written in expanded form as 10 x 10 and in standard form as 100.  Give more examples like 10 to the 3rd power, 10 to the 4th power and 10 to the 5th power.  The expanded and standard form of each of these examples in order is:  10 x 10 x 10 = 1,000  10 x 10 x 10 x 10 = 10,000  10 x 10 x 10 x 10 x 10 = 100,000.  Explain that this only works with powers of 10, but every time the exponent increases by 1, another zero is added to the end of the original 10. |
| **Assessment(s):** In their math journals have students answer the following:  1. Solve the following in the power of ten. 1,000 X 10  2. Multiply the following by powers of ten (10, 100, and 1,000): 38.006  3. Divide: 790 x 10  4. Divide decimals by powers of ten (10, 100, and 1,000): 429.5  *\*\*Teacher can collect journals to check for accuracy.\*\** | | | | | | | | |
| **Teacher Reflection:** (Next steps?)  • What went well?  • Student understanding/misconceptions.  • Specific notes about students’ thinking.  • What do I need to reteach/review tomorrow or in the future?  • New ideas or changes for next time? | | | | | | | | |